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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/840,286	04/23/2001	Narayan Srinivasa	HRL075	3326

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EXAMINER	
HIRL, JOSEPH P	
ART UNIT	PAPER NUMBER
2121	5

DATE MAILED: 08/25/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/840,286	SRINIVASA ET AL.	
	Examiner	Art Unit	
	Joseph P. Hirl	2121	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *April 23, 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☐ Claim(s) *1-12 and 19* is/are rejected.

7)☒ Claim(s) *13-18* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *2,3* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

1. Claims 1-19 are pending in this application.

2. The claims and only the claims form the metes and bounds of the invention. "Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris,* 127 F.3d 1048, 1054-55, 44USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *In re Prater,* 415 F.2d, 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969)" (MPEP page 2100-8, col 2 lines 45-48; page 2100-9, col 1, lines 1-4). The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.

Claim Objections

3. Claims 13-18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim, any intervening claims and related matters of the office action.

Claim Rejections - 35 USC § 101

4. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5. Claims 1-10 and 19 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The practical application test requires that a useful, concrete and tangible result be accomplished. Claims 1, 10 and 19 represent abstract methodology and therefore are intangible. The consequence is non-statutory.

Claim Rejections - 35 USC § 102

> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 2, 10, 11, 12 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Sirag, Jr. et al (U. S. Patent 5,252,789, referred to as **Sirag**).

Claim 1

Sirag anticipates a. storing a firing frequency count and incrementing the firing frequency count for each fuzzy rule, indicating the number of times the fuzzy rule has been fired (**Sirag**, col 5, lines 59-68; col 6, lines 1-26; Examiner's Note(EN): a histogram defines a relationship between an "event" and the number of times that event occurred; the event is synonymous with fuzzy rule and the number of times is synonymous with firing frequency count); b. determining whether the firing strength of the fuzzy rule

having the greatest firing strength exceeds a predetermined threshold (**Sirag**, col 6, lines 29-35; EN: firing strength is synonymous with frequency count); c. in the case where the firing strength of the fuzzy rule having the greatest firing strength exceeds the threshold, tuning the fuzzy rule based on the classification error (**Sirag**, col 6, lines 36-68; EN: the assigning of weight is associated with classification error); and d. in the case where the firing strength of the fuzzy rule having the greatest firing strength does not exceed the threshold, determining whether the classification membership generated by the fuzzy rule having the greatest firing strength correctly matches the known classification membership of the test data (**Sirag**, col 8, lines 4-6); i. in the case where the classification membership generated by the fuzzy rule having the greatest firing strength does not correctly match the known classification membership of the test data, tuning the fuzzy rule based on the classification error as in step c (**Sirag**, col 7, lines 37-47; col 8, lines 24-38); and ii. in the case where the classification membership generated by the fuzzy rule having the greatest firing strength correctly matches the known classification membership of the test data, applying a learning rule to update the membership function parameters such that the classification error is minimized for high-dimensional classification tasks (**Sirag**, col 7, lines 37-47; col 6, lines 16-35). EN: The substance of the preamble is anticipated by Sirag at col 5 and 6.

Claim 2

Sirag anticipates a rule base generated by the method of claim 1 (**Sirag**, col 7, lines 36-68; col 8, lines 1-23).

Claim 10

Sirag anticipates a. providing an on-line learning fuzzy inference network, wherein the fuzzy inference network generates a rule base of fuzzy rules, with each fuzzy rule assigned to a class label, and each fuzzy rule including at least one membership function corresponding to a dimension of the data, with each membership function including membership function parameters, wherein the fuzzy rules are used for classifying input data into memberships, wherein test data with a known classification membership is provided to the fuzzy inference network and wherein the fuzzy inference network uses the fuzzy rules to generate classification memberships for the test data by firing the fuzzy rules with each fuzzy rule fired assigned a firing strength based on its match to the test data, and determining the fuzzy rule having the greatest firing strength, where the membership functions of the rule having the greatest firing strength are compared to the known classification membership of the test data to determine classification error and wherein the firing frequency count of each fuzzy rule is stored, the improvement comprising (**Sirag**, col 5, lines 28-68; col 6, lines 1-68); b. determining whether the firing strength of the fuzzy rule having the greatest firing strength exceeds a predetermined threshold (**Sirag**, col 6, lines 29-35); c. in the case where the firing strength of the fuzzy rule having the greatest firing strength exceeds the threshold, tuning the fuzzy rule based on the classification error (**Sirag**, col 6, lines 36-68); and d. in the case where the firing strength of the fuzzy rule having the greatest firing strength does not exceed the threshold, determining whether the classification membership generated by the fuzzy rule having the greatest firing strength correctly

matches the known classification membership of the test data (**Sirag**, col 8, lines 4-6); i. in the case where the classification membership generated by the fuzzy rule having the greatest firing strength does not correctly match the known classification membership of the test data, tuning the fuzzy rule based on the classification error as provided in the case represented by c (**Sirag**, col 7, lines 37-47; col 8, lines 24-38); and ii. in the case where the classification membership generated by the fuzzy rule having the greatest firing strength correctly matches the known classification membership of the test data, applying a learning rule to update the membership function parameters such that the classification error is minimized for high-dimensional classification tasks (**Sirag**, col 7, lines 37-47; col 6, lines 16-35).

Claim 11

Sirag anticipates a firing frequency count calculated for each fuzzy rule and incremented each time the fuzzy rule is fired, the firing frequency count being stored in the processing device, and a rule tuning and learning rule application processor connected with the fuzzy inference network to receive the fuzzy rules (**Sirag**, col 5, lines 27-68; col 6, lines 1-68; Fig. 2); the classification error (**Sirag**, col 5, lines 27-49); the firing strength, the firing frequency count, and the classification membership generated by for the fuzzy rule having the greatest firing strength (**Sirag**, col 5, lines 59-68; col 6, lines 1-28); the test data, and the known classification memberships for the test data (**Sirag**, col 5, lines 36-68) ; said processor operative for determining whether the firing strength of the fuzzy rule having the greatest firing strength exceeds a predetermined threshold (**Sirag**, Fig. 2; col 6, lines 59-63); and a. in the case where the firing strength

of the fuzzy rule having the greatest firing strength exceeds the threshold, tuning the fuzzy rule based on the classification error (**Sirag**, col 6, lines 36-68); and b. in the case where the firing strength of the fuzzy rule having the greatest firing strength does not exceed the threshold, determining whether the classification membership generated by the fuzzy rule having the greatest firing strength correctly matches the known classification membership of the test data (**Sirag**, col 8, lines 4-6); i. in the case where the classification membership generated by the fuzzy rule having the greatest firing strength does not correctly match the known classification membership of the test data, tuning the fuzzy rule based on the classification error (**Sirag**, col 7, lines 37-47; col 8, lines 24-38); and ii. in the case where the classification membership generated by the fuzzy rule having the greatest firing strength correctly matches the known classification membership of the test data, applying a learning rule to update the membership function parameters such that the classification error is minimized for high-dimensional classification tasks (**Sirag**, col 7, lines 37-47; col 6, lines 16-35). EN: The substance of the preamble is anticipated by Siraq at col 5 and 6.

Claim 12

Sirag anticipates a rule base generated by the method of claim 11 (**Sirag**, col 7, lines 36-68; col 8, lines 1-23).

Claim 19

Sirag anticipates a. an on-line learning fuzzy inference network wherein the fuzzy inference network generates a rule base of fuzzy rules, with each fuzzy rule assigned to a class label, and each fuzzy rule including at least one membership function corresponding to a dimension of the data, with each membership function including membership function parameters, wherein the fuzzy rules are used for classifying input data into memberships, wherein test data with a known classification membership is provided to the fuzzy inference network and wherein the fuzzy inference network uses the fuzzy rules to generate classification memberships for the test data by firing the fuzzy rules with each fuzzy rule fired assigned a firing strength based on its match to the test data, and determining the fuzzy rule having the greatest firing strength, where the membership functions of the rule having the greatest firing strength are compared to the known classification membership of the test data to determine classification error and wherein the firing frequency count of each fuzzy rule is stored (**Sirag**, col 5, lines 28-68; col 6, lines 1-68); b. a rule tuning and learning rule application processor connected with the fuzzy inference network to receive the fuzzy rules (**Sirag**, col 5, lines 27-68; col 6, lines 1-68; Fig. 2); the classification error (**Sirag**, col 5, lines 27-49); the fining strength, the firing frequency count, and the classification membership generated by the fuzzy rule having the greatest firing strength (**Sirag**, col 5, lines 59-68; col 6, lines 1-28); the test data, and the known classification memberships for test data (**Sirag**, col 5, lines 36-68); said processor operative for determining whether the firing strength of the fuzzy rule having the greatest firing

strength exceeds a predetermined threshold (**Sirag**, Fig. 2; col 6, lines 59-63); and i. in the case where the firing strength of the fuzzy rule having there test firing strength exceeds the threshold, tuning the fuzzy rule based on the classification error (**Sirag**, col 6, lines 36-68); and ii. in the case where the firing strength of the fuzzy rule having the greatest firing strength does not exceed the threshold, determining whether the classification membership generated by the fuzzy rule having the greatest firing strength correctly, matches the known classification membership of the test data (**Sirag**, col 8, lines 4-6); a. in the case where the classification membership generated by the fuzzy rule having the greatest firing strength does not correctly match the known classification membership of the test data, tuning the fuzzy rule based on the classification error (**Sirag**, col 7, lines 37-47; col 8, lines 24-38); and b. in the case where the classification membership generated by the fuzzy rule having the greatest firing strength correctly matches the known classification membership of the test data, applying a learning rule to update the membership function parameters such that the classification error is minimized for high-dimensional classification tasks (**Sirag**, col 7, lines 37-47; col 6, lines 16-35).

Conclusion

6. Claims 13-18 are objected to. Claims 1-12 and 19 are rejected.

Correspondence Information

7. Any inquiry concerning this information or related to the subject disclosure should be directed to the Examiner, Joseph P. Hirl, whose telephone number is (703) 305-1668. The Examiner can be reached on Monday – Thursday from 6:00 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Anil Khatri can be reached at (703) 305-0282.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,

Washington, D. C. 20231;

or faxed to:

(703) 746-7239 (for formal communications intended for entry);

or faxed to:

(703) 746-7290 (for informal or draft communications with notation of "Proposed" or "Draft" for the desk of the Examiner).

Hand-delivered responses should be brought to:

Receptionist, Crystal Park II

2121 Crystal Drive,

Arlington, Virginia.

ANIL KHATRI
PRIMARY EXAMINER

Joseph P. Hirl

August 14, 2003